Mathematics
Algebra 1: Academic
Unit 9: Quadratic Equations and Functions

Essential Understandings	▪ Future success in algebra is based on the knowledge of quadratic equations and functions.
Essential Questions	▪ How do you evaluate and approximate square roots? ▪ How do solve quadratic equations by finding square roots? ▪ How do you use the properties of radicals to simplify radicals? ▪ How do you sketch the graph of a quadratic function? ▪ How do you use a graph to find or check a solution of a quadratic equation? ▪ How do you solve quadratic equations using the quadratic formula? ▪ How do you use the discriminant to find the number of solutions of a solve quadratic equations?
Essential Knowledge	▪ Certain square roots must be memorized. ▪ Quadratic equations can be solved by finding square roots. ▪ Properties of radicals can be used to simplify radicals. ▪ Quadratic equations can be solved by graphing.
Vocabulary	▪ <u>Terms</u>: ○ square root, radicand, radical expression, quadratic equation, parabola, quadratic formula, discriminant, vertex, axis of symmetry, quadratic roots.
Essential Skills	▪ Evaluate and approximate square roots. ▪ Solve quadratic equations by finding square roots. ▪ Use the properties of radicals to simplify radicals. ▪ Graph quadratic functions. ▪ Solve quadratic equations by graphing. ▪ Solve quadratic equations by quadratic formula. ▪ Determine and understand discriminant to find the number of solutions of a quadratic equation.

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Related Maine Learning Results	Mathematics
	A. Number
	  Real Number
	  A1.Students will know how to represent and use real numbers.
	    b. Estimate the value(s) of roots and use technology to approximate them.
	    c. Compute using laws of exponents.
	D. Algebra
	  Symbols and Expressions
	  D1.Students understand and use polynomials and expressions with rational exponents.
	    a. Simplify expressions including those with rational numbers.
	  Equations and Inequalities
	  D2.Students solve families of equations and inequalities.
	    b. Solve quadratic equations graphically, by factoring in cases where factoring is efficient, and by applying the quadratic formula.

Sample Lessons And Activities	▪ Students will orally respond to questions. ▪ Students will utilize worksheets and in their notes to demonstrate individual understanding of the concepts.
Sample Classroom Assessment Methods	▪ Quizzes ▪ Take-home worksheets ▪ Tests
Sample Resources	▪ Publications: o Algebra -Foerster